



JSC employees visit area schools during National Engineers Week. Story on Page 3.



Employees learn and participate in electrical safety at the Electrical Safety Fair. Photos on Page 4.

Space News Roundup

Vol. 34

March 17, 1995

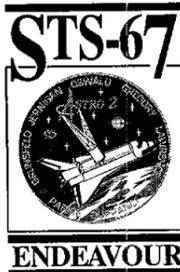
No. 11

Endeavour crew heads home with cache of astronomy data

The Space Shuttle *Endeavour* is scheduled to land today in Florida, bringing home seven crew members and a mother lode of astronomical data.

Although the shuttle and its crew appeared ready to continue the record-setting Astro-2 flight, NASA's Mission Management Team decided not to extend the mission, citing the wealth of scientific data already acquired and a conservative approach toward slowly building up the length of time for orbiting crews.

"We're certainly ready for a hot shower, a pizza, a cold beer and getting together with our loved ones again, but it's always nice to stay on orbit," Commander Steve Oswald said during Tuesday's in-flight news conference. "This is a wonderful place to go to work and live. It's almost like looking forward to a vacation in the Bahamas or something. You'd like to stay another day, but on the other hand it'll be fun to go home."



Mission Operations Representative Jeff Bantle said the decision to end *Endeavour's* journey after 15 1/2 days was made after weighing numerous factors regarding a mission extension, pro and con, including capricious weather conditions at Kennedy Space Center's Shuttle Landing Facility.

Oswald and his crew—Pilot Bill Gregory, Payload Commander Tammy Jernigan, Mission Specialist Wendy Lawrence and John Grunsfeld, and Payload Specialist Sam Durrance and Ron Parise—were scheduled to land at 1:54 p.m. CST today, weather permitting.

The *Endeavour* crew was joined on orbit by an eighth American on Tuesday when fellow Astronaut Norm Thagard, who flew with Oswald on STS-42 in January 1992, was launched toward the Russian Mir space station.

Please see **ASTRO-2**, Page 4



NASA Photo

STS-67 Payload Commander Tammy Jernigan, left, and Payload Specialist Sam Durrance use a Rolodex-style checklist to prepare for observations with the trio of Astro-2 ultraviolet telescopes in *Endeavour's* payload bay.

Baker takes Sega's place in Star City

By Kyle Herring

Astronaut Mike Baker will replace Ron Sega as the NASA manager of operational activities at Star City, Russia, near Moscow.

As director of operations, Baker will support training and preparations of NASA astronauts at the Gagarin Cosmonaut Training Center, Star City. He also will be the primary interface between NASA and the GCTC, coordinating all training and operations in Star City. Baker, the fourth astronaut to serve in this rotational assignment, will

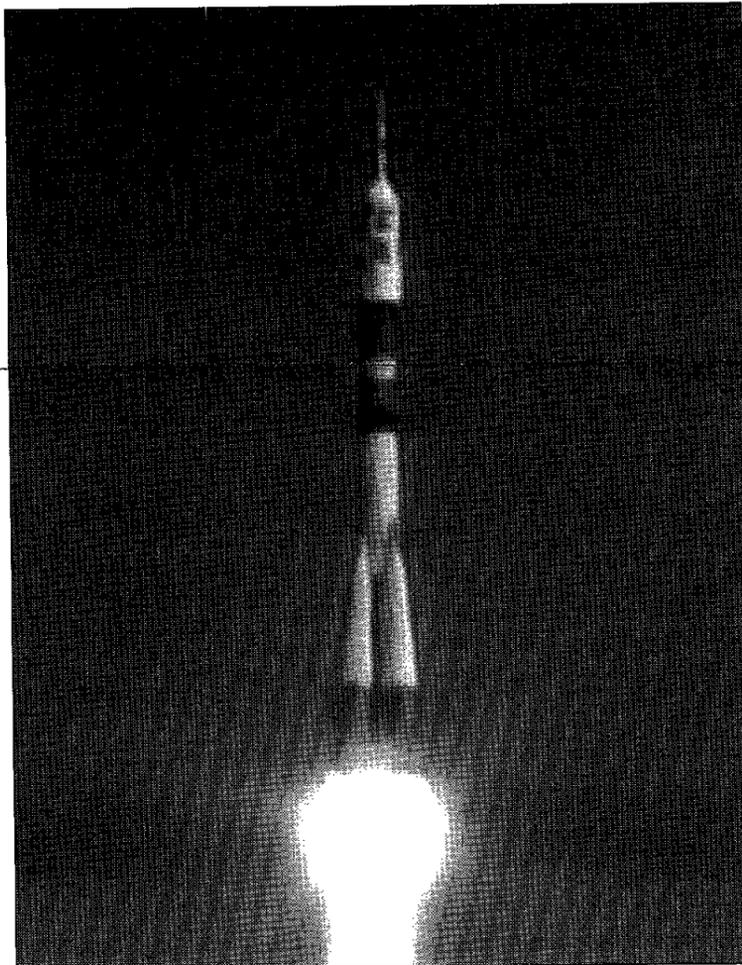
continue to establish relationships with Star City managers and cosmonauts, which are pivotal to successful, long-term joint operations involving NASA, the Russian Space Agency and GCTC.

Baker will join fellow astronauts Shannon Lucid and John Blaha, who have been training in Star City since February as the prime and backup crew members for a five-month flight aboard Mir in 1996.

Sega, 42, has served in Star City since November 1994 and will return to the Astronaut Office at JSC.



Baker



NASA Photo

NASA Astronaut Norm Thagard and Russian Cosmonauts Vladimir Dezhurov and Gennadiy Strekalov blast off Tuesday from Baikonur Cosmodrome in central Asia aboard a Soyuz rocket. The trio will host an in-flight news conference aboard the Russian Mir space station at 8:58 a.m. CST Monday. The briefing will be carried on NASA Television.

Thagard rides Russian rocket to historic link

U.S. Astronaut Norm Thagard blasted off from a frozen Baikonur launch pad Tuesday, riding a Russian rocket to a Russian space station to begin a joint research program on what will be transformed into an international orbiting laboratory.

Thagard's Soyuz TM-21 spacecraft lifted off from its Baikonur Cosmodrome pad at 12:11 a.m. CST Tuesday, and docked safely with Mir shortly before 2 a.m. Thursday.

The Mir 18 crew, comprised of Commander Vladimir Dezhurov, 32, Flight Engineer Gennadiy Strekalov, 54, and Thagard, entered Mir shortly after 3 a.m. Thursday, increasing the size of the Mir crew to six. Commander Alexander Viktorenko, 47, and Flight Engineer Elena Kondakova, 37, have been aboard Mir since Oct. 4, while Dr. Valery Polyakov, 52, holds the current world long-duration record. He launched Jan. 8, 1994.

The 51-year-old American and two Russians became the 42nd, 43rd and 44th humans to have flown on Mir. Thagard will spend about three

months conducting biomedical studies and helping his Mir crewmates reposition science modules and solar arrays in preparation for the STS-71 mission, in which a shuttle will dock with Mir for the first time.

During Thagard's stay, three more dockings are scheduled. A Progress 227 resupply ship is to be launched April 5. A Spektr science module, carrying 755 kg of U.S. cardiovascular, fundamental biology, metabolic, neuro-physiological and microgravity investigations, is set to lift off May 11. The Space Shuttle *Atlantis*, carrying six American astronauts and two Russian

cosmonauts, will lift off from Kennedy Space Center in early June, destined for the first shuttle-Mir docking. The two Russians will remain on Mir, while Thagard, Dezhurov and Strekalov will return to Earth following four days of docked operations.

Thagard's is the first long-duration space flight of an American since the Skylab missions of the late 1970s, which culminated in the 84-day stay on orbit of the Skylab 4 crew.



Kraft report urges new operations approach

The latest in a series of comprehensive reviews designed to generate options for NASA streamlining recommends that the agency modify the Space Shuttle Program's management structure.

The report to NASA Administrator Daniel S. Goldin recommends separating development from flight operations and suggests NASA "relinquish the majority of the operational responsibility to a prime contractor."

Released this week, the 20-page "Report of the Space Shuttle Management Independent Review Team," prepared by a team led by former JSC Director Christopher Kraft, advocates as one of a dozen specific recommendations changing the shuttle operations philosophy from one of government control with industry response to

one of government direction with industry operation.

The report also urges NASA to establish a clear set of program goals with emphasis on cost-efficient operations and user-friendly payload integration, to restructure management to separate development and operations, and to disengage from the daily operation of the shuttle.

"The proposed single-business management system will require a steadfast commitment from both NASA and the aerospace industry to ensure success," the report states. "NASA must be willing to define clear shuttle operating requirements with limited oversight. The prime contractor must be willing to assume responsibility for safe and productive operations."

Please see **KRAFT**, Page 4



JSC Photo by Jack Jacob

STELLAR IDEAS—The Gilruth Center is packed with participants this week for the 26th annual Lunar and Planetary Science Conference. Scientists exchanged ideas on a variety of topics including meteorites, astronomy, lunar geology and geochemistry.

JSC basketball plays at Summit

The JSC Men's "C" League will play its championship game at 4 p.m. April 1 in the Summit, and JSC employees who buy tickets to the Houston Rockets game that night may watch them play.

The Summit contacted the Employee Activities Association and invited JSC employees and contractors to play before the Rockets, said Guy King, EAA vice president for athletics.

"All of the players are excited," said King, captain of Team Tension. "Most of us have never played in the Summit before. It gives us a chance to showcase some really good talent."

Team Tension will play the Swac Attack, led by captain Anthony Spriggins. After the JSC game, the Rockets will host the Milwaukee Bucks at 7:30 p.m. Tickets will be available at the Exchange Store for \$11 and \$16.50 through March 22.

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

Snow White: Snow White and the Seven Dwarfs, noon April 8 at the Summit. Tickets cost \$12.

Houston Rockets: Houston Rockets vs. Milwaukee, 7:30 p.m. April 1 at the Summit. Tickets cost \$11 and \$16.50 on sale through March 22.

Bluebonnet trip: Bluebonnet trail bus trip April 1 and 8. Four different trips to choose from. Cost is \$15 and \$24 limit four tickets per employee.

Friendswood Ballet: Friendswood Ballet presents Sleeping Beauty, 7 p.m. March 24 at the Grand 1894 Opera House, Galveston. Tickets cost \$8.40 for general seating and \$21 for special seating.

Moody Gardens: Discount tickets for two of three different attractions: \$9.50

Space Center Houston: Discount tickets, adult, \$8.75; child (3-11), \$7.10.

Metro tickets: Passes, books and single tickets available.

Movie discounts: General Cinema, \$4.75; AMC Theater, \$4; Loew's Theater, \$4.75.

Stamps: Book of 20, \$6.40.

JSC history: *Suddenly, Tomorrow Came: A History of the Johnson Space Center.* Cost is \$11.

Upcoming events: Houston International Festival, April 20-30; JSC Picnic, April 22; Loving Feelings concert, Sept. 30.

JSC

Dates & Data

Today

Cafeteria menu: Special: tuna noodle casserole. Total Health: baked potato. Entrees: steamed salmon steak, baked chicken, fried cod fish, ham steak. Soup: seafood gumbo. Vegetables: French cut green beans, cauliflower with cheese, green peas, black-eyed peas.

Monday

Cafeteria menu: Special: breaded cutlet. Total Health: crispy baked chicken. Entrees: stir fry pork and rice, baked chicken, smoked sausage with German potato salad, French dip sandwich. Soup: cream of broccoli. Vegetables: okra and tomatoes, peas, navy beans, baby carrots.

Tuesday

Cafeteria menu: Special: fried chicken. Total Health: vegetable lasagna. Entrees: Salisbury steak, steamed pollock, vegetable lasagna, French dip sandwich. Soup: split pea and ham. Vegetables: mixed vegetables, French cut green beans, pinto beans, vegetable sticks.

Wednesday

Astronomy seminar: The JSC Astronomy Seminar will meet at noon March 22 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

Toastmasters meet: The Space-land Toastmasters will meet at 7 a.m. March 22 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Darrell Boyd, x36803.

Cafeteria menu: Special: stuffed bell pepper. Total Health: baked potato. Entrees: stir fry chicken & rice, Wieners & beans, fried fish, western special, beef, chicken sausage, Reuben sandwich. Soup: seafood gumbo. Vegetables: buttered

rice, Italian green beans, corn O'Brien, peas and carrots.

Thursday

Administrator's seminar: The third installment in the NASA Administrator's Seminar Series will be broadcast on NASA Television at 8:45 a.m. CST March 23. "The Universe: Now and Beyond," presented by NASA Chief Scientist Dr. France Anne Cordova; Dr. Linda Schele, University of Texas at Austin; Dr. Bohdan Paczynski, Princeton University; and Dr. Vera C. Rubin, Carnegie Institution of Washington; will explore why civilizations construct theories on the origins of the universe. For more information, call 202-358-1902.

AIAA dinner: The American Institute of Aeronautics and Astronautics will host a dinner at 5:30 p.m. March 23. Acting JSC Public Affairs Director Jeff Carr will discuss "Space News: Keeping the Public Informed." For information call Tanya Bryant at x31175 or Sarah Leggio at 282-3160.

Cafeteria menu: Special: barbecue smoked link. Total Health: roasted turkey breast. Entrees: turkey and dressing, beef stroganoff, steamed pollock, French dip sandwich. Soup: tomato Florentine. Vegetables: Spanish rice, lima beans, buttered squash, oriental vegetables.

Friday

Cafeteria menu: Special: meat sauce and spaghetti. Total Health: baked potato. Entrees: rainbow trout, liver and onions, beef cannelloni, ham steak, fried cod fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: steamed broccoli, breaded okra, cut corn, black-eyed peas.

March 30

AIAA workshop: The American Institute of Aeronautics and Astro-

nautics will host a real-time workshop on MATLAB software from 9 a.m.-4 p.m. March 30 at the LPI Lecture Hall. For additional information call Naz Bedrossian at 333-2127.

March 31

Alumni league: The NASA Alumni League will hold its annual dinner/dance beginning at 6 p.m. March 31 at the Gilruth Center. Tickets cost \$7.50 for members, \$15 for nonmembers. For additional information call Al Richmond at 280-7777 or Jerry Craig at 420-2936.

April 12

PSI meets: The Clear Lake/NASA Area Chapter of Professional Secretaries International meets at 5:30 p.m. April 12 at the Holiday Inn on NASA Road 1. For additional information, contact Elaine Kemp x30556.

May 10

PSI meet: The Clear Lake/NASA Area Chapter of Professional Secretaries International meets at 5:30 p.m. May 10 at the Holiday Inn on NASA Road 1. For additional information, contact Elaine Kemp x30556.

May 29

Memorial Day: Most JSC offices will be closed in observance of the Memorial Day holiday.

June 14

PSI meet: The Clear Lake/NASA Area Chapter of Professional Secretaries International meets at 5:30 p.m. June 14 at the Holiday Inn on NASA Road 1. Patsy Mitchell will discuss "Leadership Without Authority." For additional information, contact Elaine Kemp x30556.

July 4

Independence Day: Most JSC offices will be closed in observance of the Fourth of July holiday.

JSC

Gilruth Center News

Sign up policy: All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

EAA badges: Dependents and spouses may apply for photo identification badges from 7 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

Weight safety: Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. March 30 and April 11. Pre-registration is required. Cost is \$5.

Defensive driving: Course is offered from 8:15 a.m.-3 p.m. Saturday. Next class is April 1. Cost is \$19.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

Aikido: Martial arts class meets from 5-7 p.m. Tuesdays and Wednesdays. Cost is \$25 per month. New classes begin the first of each month.

Country dancing: Beginners class meets from 7-9 p.m. Mondays; advanced class meets from 8:30-10 p.m. Mondays. Partners are required. For additional information, contact the Gilruth Center at x33345.

Ballroom dancing: Ballroom dancing classes. Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.

Softball tournament: A preseason softball tournament will be held March 25-26. Cost is \$100 per team. For more information call the Gilruth at x33345.

Fitness program: Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information, call Larry Wier at x30301.

JSC

Swap Shop

Property

Rent: New Orleans condo in French Qtr, Jazz festival wk, 4/28 - 5/5, furn Greek Renaissance, priv rooftop deck, \$500. 333-8126 or 488-1327.

Rent: El Dorado Trace, 2-2, furn, FPL, alarm, sauna, \$675 + elect. 333-8126 or 488-1327.

Sale: San Leon, herb farm, 2.5 acres, 16 x 80, 3-2, mobile home, garage, pond, fenced, 30 x 30 green house, 333-6277 or 339-3562.

Sale: Santa Fe, 2.5 acres, Ave E. & 32nd south off Hwy 646, front 220' x 495'D, mineral rights, \$20k, 337-1311.

Rent: Galveston condo, furn, sleeps 6, Seawall Blvd & 61st St, wkend/wkly/dly rates. Magdi Yassa, 333-4760 or 486-0788.

Sale/Lease/Trade: Near 290&1960, 3-2-2A, new roof/paint/carpet, \$65k. x31265 & 286-3161.

Rent: Lake Travis cabin, furn, sleeps 8, spring rates, \$550/wkly/\$120/dly. 474-4922.

Sale: LC, Bayridge, 3-2-2, brick, central air, ceiling fans, lg cul-de-sac yard, \$53k/obo. 286-1934.

Rent: Breckenridge, Co. 4-3-loft house, sleeps 12, panoramic views. 303-482-9124.

Sale: Camino South, 3-2-2A, FPL, pool, appliances, \$75k. Mike, 480-0336.

Sale: Taylor Lake Estates, residential lot 90' x 135', \$39.5/obo, owner finance. Don, x38039 or 333-1751.

Rent: El Dorado Trace condo, 2-2-CP W/D, wet bar, CF, 1100 sq ft, \$525/mo. 333-6962.

Lease: Seabrook, 3-2-2, formals, 1800 sq ft, fenced yd, \$800/mo. 474-2857.

Rent: Beach-front condo, Cancun, Mexico, by the week, 1 BR, 4 persons, \$300; 2 BR, 6 persons, \$500. x37990 or x33185.

Lease: University Trace condo, 1-1 W/D, FPL, refrig, pool, sec sys, \$425/mo + dep. 848-6605.

Sale: LC, Bayou Brae, 3-2-2, new roof, remodeled kitchen, lg yard. x34606 or 554-2487.

Sale: Rosewood Memorial Cemetery, 4 lots, \$395/ea. x40250 or 941-3262.

Sale: Santa Fe, 4 acres on deadend, cedars, pines, & natural Yupons, \$25k/obo. 337-6737.

Lease: Barringer Way condo, 2-1, W/D conn, pool, no pets, ex cond, \$495/mo. 486-2048.

Sale: Waterfront .5 acre lot on Dickinson Bayou, new bulkhead, trees, \$85k. x31370.

Lease: LC, Countryside Oaks, 3-2-2, CF FPL, no pets, \$850/mo + dep. x33901 or 488-5992.

Sale: CLC, Oakbrook, 4-3-2, 2600 sq ft, pool, \$104.9k. Wil, x37439 or Jan, x45405.

Sale: Duplex, 2-1.5, fenced, W/D, frig, 5 min to JSC, \$48.5k. x35804 or 474-5610.

Cars & Trucks

'83 Olds Tornado, V-8, power, \$2k/obo. Steve, 947-3270.

'80 Corvette, PS/PW/PD, 350 auto, needs carpet, \$6.5k firm. Steve, 947-3270.

'86 Nissan Sentra, blue, 5 spd, A/C, AM/FM, 77k mi, \$1,750/obo. G. Moore, 286-1863.

'85 Olds Calais, 5-spd, A/C, good cond, 1 owner, \$1,850/obo. 991-0821.

'92 Mitsubishi Eclipse GS, 31.7 mi, 5 spd, power, alarm system, black w/silver, CD changer,

DOHC, 16VLV, ex cond, \$10.8k/obo. Lonnie, x48620 or 482-0547.

'88 Honda Accord LXI, white, hatchback 2-dr, A/C, AM/FM/cass, sec system, ex cond, \$4.3k. x36486 or 488-2276.

'84 Cadillac Coupe De Ville, white/red leather, good cond, all power, cruise, AM/FM/cass, \$3.3k/obo. x39070 or 538-1179.

'85 Chevy Chevette, lt blue, PS, AM radio, auto, good cond, \$950/obo. Tracy, x30557.

'86 Mazda 626 LX, 4 dr, pwr, sunroof, 80k mi, \$3k. Richard, x39149 or 482-6127.

'82 Chevrolet Camaro, V6, auto, A/C, stereo, great shape, \$1.8. 488-7237.

'79 El Camino, customized, auto, V8, rebuilt engine/trans/rear end, \$2.2k/obo. 998-8457.

'91 Honda Accord EX, 4 dr, auto, A/C, loaded, sunroof, white/blue inter. clean, low mileage, \$10.8k. x34878 or 486-4586.

'77 Pontiac Bonneville, 110k mi, good engine, \$500/obo. x32066 or 554-2026.

Mazda B2200 PU, runs great, AC, 5 spd, AM/FM/CD, w/6x9 spkr, new tires/brakes, \$2k/obo. Chuck, 282-3907.

'73 Mustang Mach I, red/red-black, 351C, dual exhaust, \$1k/obo. Darren, x33259 or 337-2493.

'91 Toyota PU, red, 5 spd, A/C, stereo cass, bedliner, custom wheels, ex cond, \$6.9. 771-0955.

'86 Pontiac Fiero 2m4, gold, auto, AM/FM, 80k mi, good cond, runs great. \$2k. David, x34700.

'83 Ford F150 4x4 truck, \$3k/obo. 331-3559.

'64.5 Mustang, red, 289, looks & runs good, \$3.5. 486-0972.

'64 T-Bird, w/tag & inspect, \$2.2k. 334-1629.

'84 Corvette, 60k mi, white/red, loaded, \$11k. Jeff, 335-2637 or 286-6785.

'74 Corvette, 25k mi org, white/blue, 4 spd, A/C, PB, AM/FM, 12k. Jeff, 335-2637 or 286-6785.

'93 MX-6, green w/taupe inter, 5 spd, loaded, AM/FM/cass, alarm, sunroof, ex cond, 27k mi, 486-2414.

'25 Avion Travel Trailer, good cond, \$3,250. 554-6138.

Cycles

Boys 20" bike, BMX Diamondback, "Viper F/W", ex cond, \$95. 286-8457.

Bianchi Grizzly Mt bike, 21" Ultralite frame, rock shocks, custom built wheels on Mavic rims, DX components, \$695. Elliot, 488-6156.

Boats & Planes

'86 Celebrity Bowrider, 19', Merc I/O, fully outfitted, Sportsman trailer, ex cond, \$10.9k. Charlie, 488-4412.

Sailboards, Bic Rock, 9'8" w/straps, lt air slalom, \$300; Bic Presto, 9'4" w/straps, course slalom board, \$300; Bic Rap, 9'4" w/straps, med to hi-wind slalom board, ex cond, \$300. Elliot, 488-6156.

'16' aluminum boat & trailer, \$250. 554-6138.

Sectional sofa, over stuffed 1/2 circle, cream, ultra suede, \$200. Cindy, x31769 or 334-3836.

Modern glass dining table, pedestal base, rect

Citizen printer, "CSX-140" w/GSX color option,

\$225. Magdi Yassa, 333-4760 or 486-0788.

Brother Word processor #WP2200, spreadsheets, framing function, grammar check, \$150. 554-6138.

Kenwood TS-130-HF-transceiver, \$475; Kenwood TM-441A-440 MHz transceiver, \$375. Bill, x36650 or 554-6242.

Nintendo video game deck & 10 games, \$25. 554-6138.

ZEOS 386SX 20 MHz w/240MB HD, 4 MB RAM, FAX/modem, 3.5" & 5.25" FD, Windows 3.1 & DOS 6.2, 14" VGA monitor, Microsoft mouse, \$699. 532-2147.

Macintosh Quadra 700, 230 MB HD, 8 MB RAM, 14" color monitor, ex kybd, mouse, fax/modem, & software, \$1.1k; 260 MB ext HD, \$200; Apple Personal Laserwriter LS, \$250. Mike, x34543.

Mac SE, 2MB RAM, 20MB HFD, Hayes 1200 Bd modem, S/W, manuals, games, \$250. Jim, x33566 or 286-7374.

486DX33 IBM Compat PC, 245 MB HD, SVGA-VLB, 28DP SVGA monitor, 3.5 & 5.25 floppy drives, 4MB RAM, mini tower case, \$750. Charles, x36422 or 280-9650.

Pioneer SX-2300 recvr, 60W channel, 5-band equalizer, Pioneer PD-4700 single disk CD player, Technics SB-K915 3-way spkr w/12" woofers, \$225/all. x34538.

Photography

Canon AE-1 program w/35-70 lens, 70-210 lens/flash, \$325. Mark, x35211 or 561-7768.

Canon SLR EOS Rebel LX, w/35-105 mm lens, 2x tele converter, UV filter, case, strap & user guide, \$275. Dennis, x31409 or 488-0182.

Pets & Livestock

Free, black Lab, male, 5 yrs. x38843 or 409-925-5011.

Rottweiler puppies, AKC registered, \$350. Linda, 484-0987.

German shepherd/Lab mix, male, 1 yr, beige/black, \$100/obo. x32983 or 482-6535.

Collie puppies, champion bloodline, born 1/28/95, \$150. Cindy, x31769 or 334-3836.

Black Lab mix, 3 yrs, female, good with kids, smart. 286-0930 or 280-2415.

Quiet home & TLC for 5 yr old short hair Torti cat, fem, spayed. x37176 or 554-2487.

Young male cat, neutered, black & tan. x34606.

Household

Love seat, brown velour, contemporary style. x40250 or 941-3262.

Breakfast table w/4 chairs & 2 leaves, \$200. 286-0022.

Wards high capacity microwave oven, \$75/obo. Johnny, x32353 or 992-8177.

King sz waterbed w/hdbd, \$150; trundle bed w/mattress, \$85/obo; matching chair/rocker/table, \$85/set. 332-9094.

Sectional sofa, over stuffed 1/2 circle, cream, ultra suede, \$200. Cindy, x31769 or 334-3836.

Modern glass dining table, pedestal base, rect

glass beveled top, 4 upholstered parsons chairs, \$450/all or sold sep. Katie, x33185.

Round kitchen oak table, 4 wooden chairs, \$230; round table w/wood like veneer, \$60. 474-3820 or 282-3570.

King sz waterbed, pecan contempo, hdbd & frame, 6 drawers, std matt/liner/heater, \$175. x31370.

Carved dk walnut 63"x44" DR table w/18" leaf, 6 chairs & matching glass door china cabinet, 60"x72"x18", \$500/all. 326-2758.

Full/qn sz bed/frame, dresser/mirror/nite stand, \$450; solid oak rocking chair, \$85. Kim, 996-0152.

Sink, dbl, stainless, w/faucet, \$35. 488-4089.

Chrome & glass DR room set, 5' table, marron seats, \$75/obo. Mark, x37591 or 488-0056.

Formal living, sofa w/green floral print, \$550; antique dresser, \$75; lg ornate antique mirror, \$300; color TV w/remote, \$175; TV stand, \$15. x37113 or 286-3019.

Twin & standard bedroom suites, 2 dbl dressers, rice carved, cherry, matt/springs, \$380/425; qn sofa & love seat, \$425; rattan table, 6 chairs, \$200; & misc tables, \$25-\$75. x35804 or 474-5610.

China, Legendary by Noritake, "String of Pearls" pattern, complete 8 place settings, sugar bowl w/lid, creamer, extra pcs, \$1.2k. x34538.

Roll top desk, 4' Wx20"D, \$200. 484-0898.

Sleeper/sofa, qn sz matt, brown floral, \$200; matching love seat, \$150; recliner, \$75; RCA 25" color console TV, \$150; curio cabinet, dk oak, \$150; matching corner unit, \$75. x39020 or 991-0361.

China, Legendary by Noritake, "String of Pearls" pattern, complete 8 place settings, sugar bowl w/lid, creamer, extra pcs, \$1.2k. x34538.

Roll top desk, 4' Wx20"D, \$200. 484-0898.

Sleeper/sofa, qn sz matt, brown floral, \$200; matching love seat, \$150; recliner, \$75; RCA 25" color console TV, \$150; curio cabinet, dk oak,



Engineering Ambassadors

JSC employees involve students in science, engineering, technology during National Engineers Week

By Barbara Tomaro

More than 190 JSC volunteers ventured back into classrooms during the month of February for National Engineers Week. Many of them had not been there for years. This time, however, they went to share their experiences as well as learn.

They came from different backgrounds — some of them engineers, some of them educators or scientists, some of them managers — and headed for different destinations. They went to schools as close as Armand Bayou Elementary on NASA Road 1 and as far as Kirbyville High School, 150 miles away. They spoke with students young enough to be in kindergarten and old enough to be in high school.

Their goal was to relate to the students practical applications of math, science, engineering and technology. To accomplish this, volunteers used a combination of words, pictures, models and hands-on experiments to promote student involvement.

The favorable response from educators has been tremendous, said Norma Rhoads of the

Education and Information Services Branch, who coordinated JSC's involvement. Teachers have phoned expressing their delight in the program and commending the volunteers for their excellent presentations.

"I believe this type of program is essential to NASA. It illustrates our commitment to the community, and encourages students to understand that adults have a real interest in their future," said Rhoads, who planned the project for months.

Image Analyst Barry Schroder of RMS Photographic Services was well received by 450 students and teachers.

"I was impressed with Mr. Schroder's enthusiasm and professionalism for his career," wrote Santa Fe High School counselor Linda Cota. "He was able to translate those qualities to the students. He was able to raise our levels of knowledge and concern about the Earth's delicate ecology."

The goal of involving students in the fields

of engineering and technology was embraced with enthusiasm from both students and teachers. In a note to volunteer Brant Adams of the Space Station Program Office, teachers at Landolt Elementary School expressed their gratitude.

"The children have learned so much from you, and you have peaked their interest to learn more," they wrote.

For volunteers, the benefits of doing their part made the combined efforts all worthwhile.

"The classes really get involved and ask great questions," said Ann Bufkin of the Technical and Project Implementation Office. "I always feel rejuvenated about my own career when I see the excitement of the students. It's a great feeling."

In all, volunteers met with more than 17,000 students at 100 different schools. It was a busy three-week period, but a tremendously successful one, Rhoads said, and

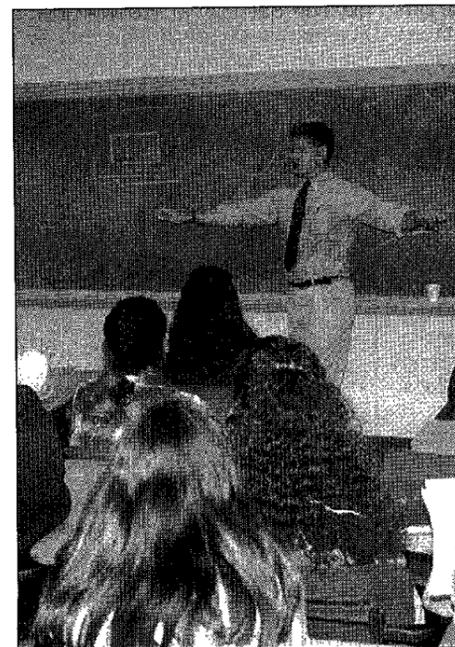
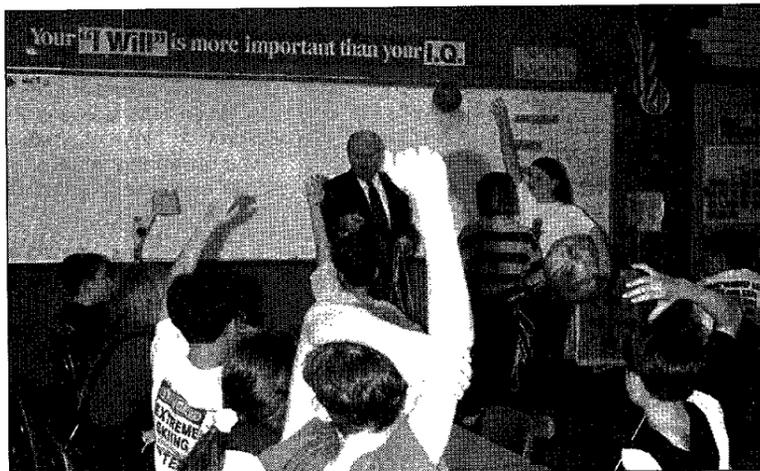
next year's program promises to be just as exciting. Many of this year's participants have already volunteered again. And some, like Schroder, said they would even like to add one more school.

National Engineers Week was created to increase public awareness of engineers' contributions to the quality of life. The volunteers share a common desire, to help elementary and high school students discover the exciting worlds of engineering and technology. Teachers received educational packages prior to the visit and volunteers took NASA bookmarks and book covers for the students. Most importantly, they took their knowledge, enthusiasm, and willingness to share experiences with students.

Due to the need for partnerships with schools year 'round and the belief of volunteers that this type of project is worthwhile, the JSC Educational Outreach Program sends volunteers into the schools as guest speakers and tutors, and assists students with career options. For further information on the Educational Outreach Program, contact Norma Rhoads at 483-0235, or Mae Decker at 483-2929. □



ENGINEERS
Turning Ideas
Into Reality.



Left to right, top to bottom: 1) A table of experiments and crew tools intrigue fourth grade students at Hall Elementary. 2) A fifth grade student at Hall Elementary performs the straw in the potato experiment, which helps teach about velocity and damage space debris impacts can do. 3) Bill Shepherd, deputy manager of the Space Station Program, discusses math theories used in everyday life with high school students in Charles Broadstreet's algebra class at Galena Park High School. 4) Mission Operations Director John O'Neill asks questions of students in Cerise Wells' fifth grade science class at Bales Intermediate School. 5) Donald Pipkins of the Avionics Systems Division examines a model with Liane McDede, an Hernandez Engineering education specialist. Pipkins took several models to aid in his presentation at Hunters Glen Elementary School. 6) As 4th grade members of his audience at Hall Elementary School investigate various experiments, Donn Sickorez, the University Affairs Officer for the Education and Information Services Branch, prepares an activity to illustrate how the astronauts cut cables in space. 7) Mary Wilkerson of the Image Sciences Branch collects textbook covers and bookmarks from Debbie Herrin, an Hernandez Engineering information specialist, to take to the students she visited at Lake Road Elementary School.

Photos by Norma Rhoads

Ulysses spacecraft makes closest approach to Sun

The Ulysses spacecraft passed within 124 million miles of the Sun on Sunday, the closest it has ever been or ever will be to the Sun since it was launched on October 6, 1990.

Its distance from Earth at perihelion, or closest approach to the Sun, will be about 215 million miles, said Donald Meyer, Ulysses deputy mission operations manager at NASA's Jet Propulsion Laboratory.

Ulysses is crossing rapidly into the Sun's northern hemisphere, traveling at a rate of about 0.8 degrees in solar latitude per day and a velocity

of approximately 73,000 miles per hour with respect to the Sun.

For the last month the spacecraft has been collecting data on the equatorial region of the Sun. This effort will continue for the next month, until Ulysses begins to see features from the northern hemisphere of the Sun, said Peter Beech, Ulysses mission operations manager for the European Space Agency.

All spacecraft operations and science experiments continue to go well. A radio science experiment is under way to measure the electron

content of the Sun's fiery outer atmosphere, called the corona, as Ulysses passes in back of the Sun as seen from Earth.

The spacecraft's S-band transmitter was turned on Feb. 22 to take advantage of Ulysses' unique position in space to conduct the radio experiment. This transmitter, in conjunction with the X-band transmitter, will be beaming signals through the corona to provide measurements of the electron content through March 15.

As Ulysses crosses into the north-

ern hemisphere of the heliosphere—the region of space dominated by the forces of the solar wind—it will begin its next phase of the primary mission to study that region at all solar latitudes. This phase will be highlighted when Ulysses reaches 70 degrees north of the Sun's equator in June and begins a four-month pass over a second region of the Sun never before explored, as it did with the Sun's southern hemisphere.

During earlier phases of the mission, Ulysses mission scientists

found that the solar wind in the Sun's polar regions flows at about 2 million miles per hour (750 kilometers per second), nearly twice the velocity measured at lower solar latitudes. They also reported that cosmic ray intensity at high latitudes increased, but not nearly to the extent predicted.

The Ulysses mission, managed jointly by NASA and ESA, was designed to study the regions above the Sun's poles. JPL manages the U.S. portion of the mission for NASA's Office of Space Science.

Mobley named space agency's chief engineer

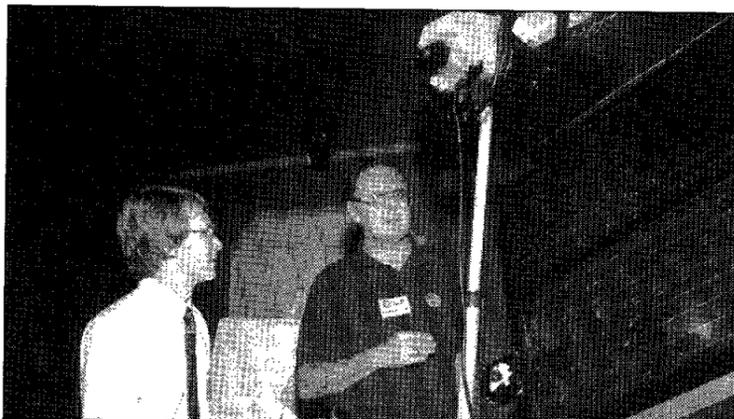
David Mobley has begun his duties as NASA chief engineer at Headquarters.

The chief engineer will report directly to the administrator and will be responsible for overall review of the technical readiness and execution of all NASA programs. Mobley will ensure that the development efforts and NASA mission operations are being planned and conducted on a sound engineering basis. He also will provide an integrated focus for agencywide engineering policies, standards, and practices.

Mobley is serving in the position under a rotational assignment. He was technical assistant to the Marshall Space Flight Center director. He also is a technical adviser to the space station program manager at JSC and has been tasked with establishing a Liaison Office in Moscow.

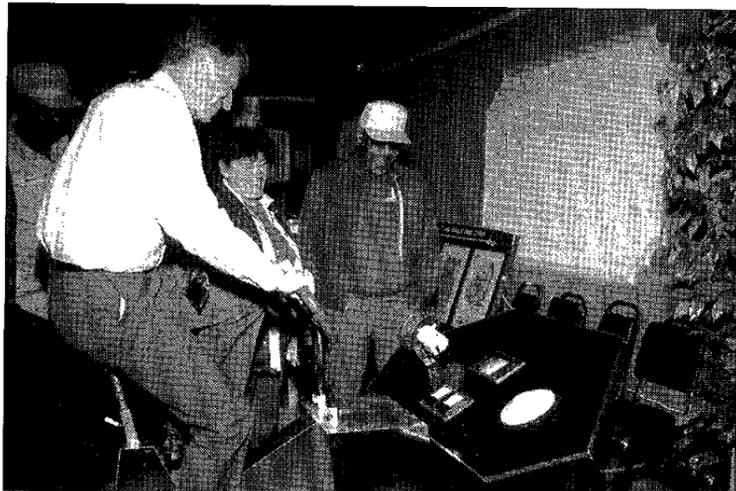
Mobley joined NASA in 1961 as a test engineer at MSFC. He went on to work on the Apollo Telescope Mount and also worked at Kennedy Space Center as part of the launch team for Skylab. In 1976, Mobley was part of a team that worked with the European Space Agency. In 1984, Mobley was named Spacelab chief engineer. In 1988, he became deputy manager of the Solid Rocket Module Project Management Office at MSFC.

In 1993, Mobley became a member of the Space Station Redesign Team.



Photos by Benny Benavides

POWERFUL MESSAGE—JSC employees learn lessons about the dangerous nature of electricity at an Electrical Safety Fair held last week. Top: Mack Manesfield of Houston Light & Power, right, and Mike Ewert, a thermal analyst in the Crew and Thermal Systems Division, discuss a solar panel that is being developed as a joint project between HL&P and JSC. Bottom: Mario Spencer pedals power to demonstrate how much energy it takes to run appliances as J.D. Bledsoe and Janie Olivaz, both Four Seasons Services employees, look on. The test showed how little energy is required to generate a deadly current.



U.S. instruments fly on Japanese mission

Several NASA-built components of the Infrared Telescope in Space, the first Japanese orbiting telescope dedicated to infrared astronomy, are scheduled to be launched aboard Japan's Space Flyer Unit on Saturday from Japan.

The SFU platform will be launched from the Tanegashima Space Center in Japan aboard NASDA's H-II rocket and be retrieved by the space shuttle later this year.

SFU is scheduled to be captured in-orbit by Endeavour during STS-72, scheduled for December 1995. The crew is to include a Japanese mission specialist, Koichi Wakata.

U.S. scientists, in collaboration with Japanese colleagues, built two of the four IRTS instruments. Dr. Thomas Roellig, an astrophysicist at Ames Research Center is co-principal investigator for the Mid-Infrared Spectrometer. MIRS will provide spectroscopic measurements at wavelengths between about 5 and 12 microns—radiation about 10 times longer than visible light. MIRS will study molecular gas in the Milky Way and infrared emissions from solar system dust.

IRTS will survey about 10 percent of the celestial sky during its three-week mission. Its lifetime is limited by the amount of onboard refrigerant. During operations, IRTS will be cooled to -455 degrees Fahrenheit to provide high-sensitivity observations of thermal infrared radiation. Once the coolant is depleted, IRTS

will stop operating and other experiments will be conducted.

IRTS consists of a 15-centimeter diameter telescope and four scientific instruments designed to study infrared radiation at wavelengths between about 1-1,000 microns (one millionth of a meter). The orbiting observatory will provide measurements of the interstellar matter—the dust and gas—in the disk of our galaxy and the interplanetary dust within our solar system. It also will yield new information about cool stars and cosmology.

The two-pound MIRS will provide measurements that are "100-1,000 times more sensitive than anything that has been measured in this wavelength before," Roellig said. "I expect that the most exciting discoveries will be unexpected ones."

Dr. Andrew Lange built the Far-Infrared Photometer instrument while at the University of California in collaboration with colleagues at Nagoya University. FIRP will perform imaging at four far-infrared and sub-millimeter bands between 150 and 700 microns. FIRP will study interstellar dust, variations in cosmic background radiation, and extragalactic submillimeter radiation.

Ground tracking support for the IRTS mission will be provided by the Kagoshima Space Center, Japan, and NASA's Deep Space Network, with its antennas at Goldstone Calif. Canberra Australia, and Madrid Spain.

Astro-2 telescopes gather data on wide range of targets

(Continued from Page 1)

"This has gotten to be a large enough operation that no country can really afford to go it alone," Oswald said. "The kind of international cooperation we are seeing now between the Russians, ourselves and our other partners in the International Space Station is the way of the future. Certainly it's exciting to have 13 humans on orbit at once, but I don't think 10 years from now we'll look back on this and find that to be terribly out of the norm."

As the onboard astronomers continued to shovel data to the ground through the Ku-band antenna system, investigators were already beginning the multi-year task of analyzing what it means.

"It's fun to be here and have everything work," Durrance said. "We can see that the quality of the data is excellent."

The Ultraviolet Imaging Telescope imaged NGC 2300, a cluster of galaxies that emits large quantities of X-rays, in hopes that it will provide a better understanding of the relationship between galaxies in a cluster and star formation in galaxy clusters.

UIT and the Wisconsin Ultraviolet Photo-Polarimeter Experiment were pointed at the Moon several times. Guest Investigator Dr. Randy Gladstone said the observations should help astronomers learn more about the surface properties of the Moon, asteroids and other planet's satellites.

The Hopkins Ultraviolet Telescope

was used to observe a radio-loud quasar in the far- and extreme-ultraviolet wavelengths. HUT Principal Investigator Dr. Arthur Davidsen will try to understand more about the shape of its ultraviolet spectrum, testing the theory that quasars are powered by supermassive black holes.

Astro-2 also teamed up with the Hubble Space Telescope for a close examination of Jupiter's "northern lights." Ultraviolet photographs reveal a glowing circle of charged particles in its upper atmosphere, comparable to the aurora borealis visible in our far northern latitudes.

Durrance, whose astronomical specialty is Jupiter, carefully centered the HUT view on the northern region of the planet for high-quality spectral

and polarimetric measurements and wide-field, far-ultraviolet images. At the same time, HST's Wide Field/Planetary Camera 2 obtained high resolution, far-ultraviolet images.

"We're very interested in whether the recent volcanic eruption on Jupiter's moon Io produced more ions in the planet's magnetosphere and led to a brighter aurora," said Dr. Paul Feldman. "There is some debate as to whether atmospheric ionization in the Jovian system is created primarily by sunlight, as it is in Earth's atmosphere, or by volcanic activity on Io."

Astronomers for WUPPE were surprised to learn that the orientation (polarization) of ultraviolet radiation coming from Mars is due to the plan-

et's soil composition, rather than elements in the Martian atmosphere. "We'll continue to examine our data to learn more about the composition of Martian soil," said WUPPE scientist Dr. Geoff Fox.

Oswald completed final data takes Tuesday with the Middeck Active Control Experiment, and work with two pharmaceutical research tools—the Commercial Materials Dispersion Apparatus Instruments Technology Associates Experiment and two Protein Crystal Growth systems—preceded as scheduled.

A welcome home ceremony is planned Saturday at Ellington Field. For the latest arrival time, call the Employee Information Service at x36765.

Kraft report recommendations in line with current themes

(Continued from Page 1)

Recommendations from the report will be consolidated with NASA's ongoing Office of Space Flight Review and forwarded to Goldin in mid-May.

"The Kraft report's themes of reducing the role of civil service employees, increasing contractor accountability and reducing the number of government-to-contractor interfaces are all consistent with Administrator Goldin's guidelines for restructuring the shuttle program," said Bryan O'Connor, deputy associate administrator for space shuttle.

O'Connor said some of the recommendations from the Kraft report already are being implemented. "For example, we agree with Dr. Kraft's team that a review of program requirements is appropriate after more than a

decade of experience operating this system," he said. "Our goal is to significantly reduce the number of normal maintenance and launch processing steps required before each flight, based on that wealth of experience."

The Kraft team found that the present shuttle management system has functioned reasonably well despite being spread across multiple NASA centers and support contractors. It recognized that with more than 65 successful launches the shuttle has become a mature and reliable system, about as safe as today's technology will provide, and that a "valiant" effort by NASA has reduced operating costs by about 25 percent over the past three years.

According to the report, the new management approach would require

seven immediate actions, ranging from freezing the current shuttle configurations and making upgrades in blocs to limiting NASA involvement in operations and minimizing NASA-contractor interfaces.

"We are minimizing changes to the fleet consistent with the priorities laid out by the Kraft committee," O'Connor said.

Kraft's team included Frank Borman, former Eastern Airlines chief executive officer and retired astronaut; George Jeffs, former president of Rockwell International's North American Aerospace Operations; Robert Lindstrom, former senior vice president and general manager for Space Operations at Thiokol Corp. and retired manager of the Space Shuttle Projects Office at Marshall Space

Flight Center; Thomas Maultsby, vice president of General Research Corp. and former senior Department of Defense representative to NASA Headquarters; and Isom Rigell, former vice president of Florida Operations for United Space Boosters Inc. and former launch vehicle operations director at Kennedy Space Center.

"The future challenge of the Space Shuttle Program is to progress to operational status and then determine the economic viability and contribution capacity of its space technology," the report concludes. "This is a necessary step in the progression to commercial space flight and will allow NASA and private industry to make reasonable comparisons in economy between the shuttle and proposed reusable launch vehicles in the future."

Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

The Roundup office is located in Bldg. 2, Rm. 181. The mail code is AP2. The main Roundup telephone number is x38648 and the fax number is x45165.

Electronic mail messages should be sent to the editor, khumphri@gp301.jsc.nasa.gov or the associate editor, kschnmidt@gp301.jsc.nasa.gov.

Editor Kelly Humphries
Associate Editor Karen Schmidt